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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,431	02/27/2004	Scott A. Leman	27581/01367.1	7015

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EXAMINER

RIDDLE, KYLE M

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/788,431	Applicant(s) LEMAN, SCOTT A.	
	Examiner Kyle M. Riddle	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11, 21 and 25-28 is/are allowed.
- 6) ☒ Claim(s) 12, 15-20, 22-24, 29, 32, 35 and 38 is/are rejected.
- 7) ☒ Claim(s) 13, 14, 30, 31, 33, 34, 36, 37, 39 and 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>03212005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Claim Objections

1. Claim 14 is objected to because of the following informalities: Claim 14 as originally filed on 27 February 2004 is dependent from claim 13, but the claim listing in applicant's amendment received 21 March 2005 has claim 14 dependent from claim 12 as originally filed (page 8 of the amendment). Since it appears to the examiner that the intention was to keep the originally filed claim 14, claim 14 will be examined as it depends from claim 13. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 12, 15-20, 22-24, 29, 32, 35, and 38 are rejected under 35 U.S.C. 103(a) as being obvious over Fuller, Jr. et al. (U.S. Patent 4,050,435).

Re claims 12, 15-18, 29, 32, 35, and 38, Fuller, Jr. et al. disclose a valve control system comprising:

- a mechanically driven actuator including a cam 24, a closing spring 22, and a mechanical linkage through a rocker arm 18 adapted to move the valve between an open and closed position (column 2, lines 58-63, Figure 2, column 4, lines 9-21, and Figure 3);

Art Unit: 3748

- a valve seat and engine valve 20 adapted to move from the open to closed positions (column 2, lines 58-61);

- a fluidically driven actuator 30 adapted to hold the exhaust valve in a hydraulically locked open position (column 4, lines 22-34 and Figure 5);

- an actuator cylinder 30 in fluid communication with a source of pressurized fluid (column 3, lines 16-32 and column 4, lines 24-30);

- a valve control unit for an intake or exhaust valve (column 3, lines 7-10).

Re claims 19, 22, and 24; Fuller, Jr. et al. disclose a valve control device with intermittent fluid communication for predetermined opening and closings, and an actuator piston 66 and hollow piston 50 forming the parts of a fluid ram or jack to force the valve open (column 4, lines 9-46).

Re claims 20 and 23, Fuller, Jr. et al. disclose the source of pressurized fluid preferably being from the lubrication oil system (column 2, lines 17-20 and column 3, line 17).

Fuller, Jr. et al. fail to disclose the locked open position as an intermediate position or holding the exhaust or intake valve open during at least a portion of an intake or compression stroke to allow exhaust gas to be reintroduced into the cylinder or reduce the compression ratio of the engine. Fuller, Jr. et al. suggests the control device resulting in a shortened pushrod for holding the valves in an open position (column 2, lines 1-3). It is obvious that a shortened position would inherently be in an intermediate position between completely open and closed. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, that the suggestion of Fuller, Jr. et al. would include an intermediate locked position. Also, the inclusion of reintroducing exhaust gas into the cylinder by holding the exhaust valve

Art Unit: 3748

open during a portion of the intake stroke or holding the intake valve open during a portion of a compression stroke to reduce the compression ratio is well known and obvious in the art.

4. Claims 12, 15-19, 22, 24, 29, 32, 35, and 38 are further rejected under 35 U.S.C. 103(a) as being obvious over Arrieta (U.S. Patent 4,423,709).

Re claims 12, 15-18, 22, 24, 29, 32, 35, and 38, Arrieta discloses a method for operating a multicylinder engine comprising:

- a mechanically driven actuator including a cam 45, compression spring 32, and a mechanical linkage through a rocker arm 37 adapted to move the valve between an open and closed position (column 3, lines 36-54, column 5, lines 21-38, and Figures 1, 4-5);
- a valve seat 35 and engine valve 30 adapted to move from the open to closed positions (column 3, lines 29-54);
- a hydraulically driven cylinder actuator 96 adapted to hold the intake valve in a hydraulically locked open position (column 5, lines 30-41 and Figures 4-5);
- a hydraulic actuator cylinder 96 in intermittent fluid communication with a source of pressurized fluid (column 5, lines 6-8 and Figures 4-5).

Re claim 19, Arrieta discloses a hydraulic cylinder 96 adapted to move a rod 95 and maintain the valve in the open position (column 5, lines 31-35 and Figures 4-5).

Arrieta fails to disclose holding the valve open in an intermediate position or holding the exhaust or intake valve open during at least a portion of an intake or compression stroke to allow exhaust gas to be reintroduced into the cylinder or reduce the compression ratio of the engine. The application of holding the valve open in an intermediate position would have been obvious depending on design variables such as desired timing and lift considerations, engine design, etc.

Art Unit: 3748

Also, the inclusion of reintroducing exhaust gas into the cylinder by holding the exhaust valve open during a portion of the intake stroke or holding the intake valve open during a portion of a compression stroke to reduce the compression ratio is well known and obvious in the art.

Allowable Subject Matter

5. Claims 13, 14, 30, 31, 33, 34, 36, 37, 39, and 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 1-11, 21, 25-28 are allowed.

Response to Arguments

7. Applicant's arguments filed 21 March 2005 have been fully considered but they are not persuasive.

8. Applicant argues on page 17 of the amendment that the small piston 66 and hollow piston 50 are driven to an extent where the valve is open outside of a range that would include an intermediate position. Examiner disagrees. Not only does Fuller, Jr. et al. suggest the control device resulting in a shortened pushrod for holding the valves in an open position (column 2, lines 1-3), but again suggest selectively coupling and uncoupling control devices to vary the length of the variable length hollow piston (column 4, lines 43-46). This suggestion would make it obvious to one of ordinary skill that an intermediate locked position is well within the scope of the invention by Fuller, Jr. et al. With regard to the arguments on the bottom of page 18 and top of page 19, the examiner disagrees in that even though Arrieta does not specifically disclose an intermediate position, the apparatus as cited could easily perform the same equivalent

Art Unit: 3748

functionality. Reference claims 21-40, applicant has made no argument as to patentability of these claims.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

10. The IDS (PTO-1449) filed on 21 March 2005 has been considered. An initialized copy is attached hereto.

Communication

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyle M. Riddle whose telephone number is (571) 272-4864. The examiner can normally be reached on M-F (07:30-5:00) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 3748

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kyle M. Riddle
Examiner
Art Unit 3748

kmr



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